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PARACLEISTOSTOMA TWEEDIEI, A NEW SPECIES OF CAMPTANDRIINE CRAB, FROM SINGAPORE AND BRUNEI MANGROVES (CRUSTACEA: DECAPODA: BRACHYURA: OCYPODIDAE)

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ABSTRACT. — A new camptandriine species, *Paracleistostoma tweediei*, is described from Singapore mangroves. It is distinct from other *Paracleistostoma* species in the form of its male first pleopod, which has a short spine instead of a median lobiform process, the densely pubescent branchial region of the carapace and the sub-basal position of the molariform tooth on the immovable finger of the chela. A key is provided for *Paracleistostoma* species found in Singapore.

INTRODUCTION

According to Manning & Holthuis (1981), the species actually belonging to *Paracleistostoma* De Man, 1895, s. str., are *P. depressum* de Man, 1895 (type species), *P. longimanum* Tweedie, 1937, *P. wardi* (Rathbun, 1926) and *P. dotilliforme* (Alcock, 1900). They also doubtfully referred *Cleistostoma mcneilli* Ward, 1933 and *Paracleistostoma eriophorum* Nobili, 1903, to *Paracleistostoma* (Manning & Holthuis, 1981:208-209). Since then, two new species have been described: *P. tomentosa* Yang & Sun, 1993, and *P. crassipilum* Dai, Yang, Song & Chen, 1986.

Of the above species, only three were previously reported from Singapore and Peninsular Malaysian mangroves, namely, *P. depressum*, *P. longimanum* and *P. wardi*. The latter species was found to be misidentified and is here reported as new from this region and Borneo. A key is provided for these three species.

The abbreviations G1 and G2 are used for the male first and second gonopods respectively. Type specimens are deposited in the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore and in the Queensland Museum (QM), South Brisbane, Australia. Measurements given are of the carapace length and breadth respectively.

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TAXONOMY

Paracleistostoma de Man, 1895
Paracleistostoma tweediei, new species
(Figs. 1-3)

Material examined. - Holotype - male (7.9 x 10.2) (ZRC 1987.57), Lim Chu Kang mangrove, Singapore, coll. P. K. L. Ng & S. Harminto, 13 Sep.1986.

Paratypes - 8 males (5.3 x 6.7, 6.4 x 8.3, 6.6 x 8.4 (ZRC 1987.60-62), 7.4 x 9.4, 7.5 x 9.7, 7.5 x 10.0, 8.3 x 10.7, 8.8 x 11.5 (ZRC 1987.57-59)), same data as above. - 1 male (9.3 x 11.9) (QM W19967), Batu Marang, Brunei, coll. N. A. Mackenzie, Mar.1993.

Description. - Carapace surface smooth, slightly convex, broadly quadrangular, broader than long (1.26-1.33 times), regions indistinct, epigastric lobes crescent-shaped and moderately low, metagastric groove shallow. Anterolateral margins cristate, anteroexternal angle of carapace with tuft of short setae, posterolateral regions with dense mat of short setae, posterolateral margin lined with small granules obscured by pubescence. Posterior margin straight, 2.3 times broader than front.

Front entire, edges cristate, 1.1 times fronto-orbital width, upper surface slightly concave centrally, anterolateral angles of front rounded.

Orbital margins with numerous long hairs. Supraorbital margin unarmed, with moderately shallow triangular notch on inner edge adjacent to front, giving supraorbital margin a slightly sinuous appearance, infraorbital margin straight, beaded with small granules along central one-third, external orbital angle rounded and obtuse.

Antennules folding slightly obliquely, basal segment occupying half of fossa. Antennae entering orbit, fully occupying orbital hiatus. Flagellum short, consisting of three articles ending with short setae.

Epistome wide, short, concave proximally, distal edge slightly cristate.

Third maxillipeds broad, completely covering buccal field. Merus with rounded edges, rather ovoid in appearance. Palp articulating in middle of anterior margin of merus. Ischium broadly rectangular, 1.5 times longer than merus measured along inner edge. Exopod narrow, with well-developed flagellum.

Cheliped large, carpus globular, outer surface smooth, inner surface with short comb of long stiff setae, margins minutely beaded with granules. Tips of fingers spoon-shaped. Movable finger with large molariform tooth on basal edge, other teeth small and rounded.

Ambulatory legs long, densely setose. First and fourth pairs almost equal in length. Third pair longest. Dactyli on all legs smooth and unarmed, about half length of propodi.

Abdominal segments 2-5 fused, sutures indistinct. Telson with distal edge rounded.

G1 external edge with long setae. Distal recurved portion large and globular, with short, median spine. G2 short (about 1/4 length of G1 measured from base till beginning of recurved portion of G1), proximal portion wider than apex. Distal end opening slightly into funnel-shaped structure.

Remarks. - Specimens of this species in the ZRC had been incorrectly identified as *P. wardi* (Rathbun, 1926), a species listed in Tan & Ng (1994) as a record for Singapore. Specimens of *P. wardi* from Australia, collected close to its type locality, were examined. The new species, *P. tweediei*, differs from *P. wardi* in that the tip of the male first pleopod bears only a short median spine whereas in *P. wardi*, a large truncate lobe is present. It also differs from *P. depressum* and *P. longimanum* in several aspects of the carapace, chela and G1 (see key to species). Specimens previously referred to *P. wardi* from Peninsular Malaysia by Tan & Ng (1994) should now be referred to *P. tweediei*.

No female specimens have been collected and we cannot determine if sexual dimorphism exists in this species.

Etymology. - The species honours the late Mr. Michael Tweedie, who first started "mangrove carcinology" in the 1930s, and was the epitome of a gentleman scholar.

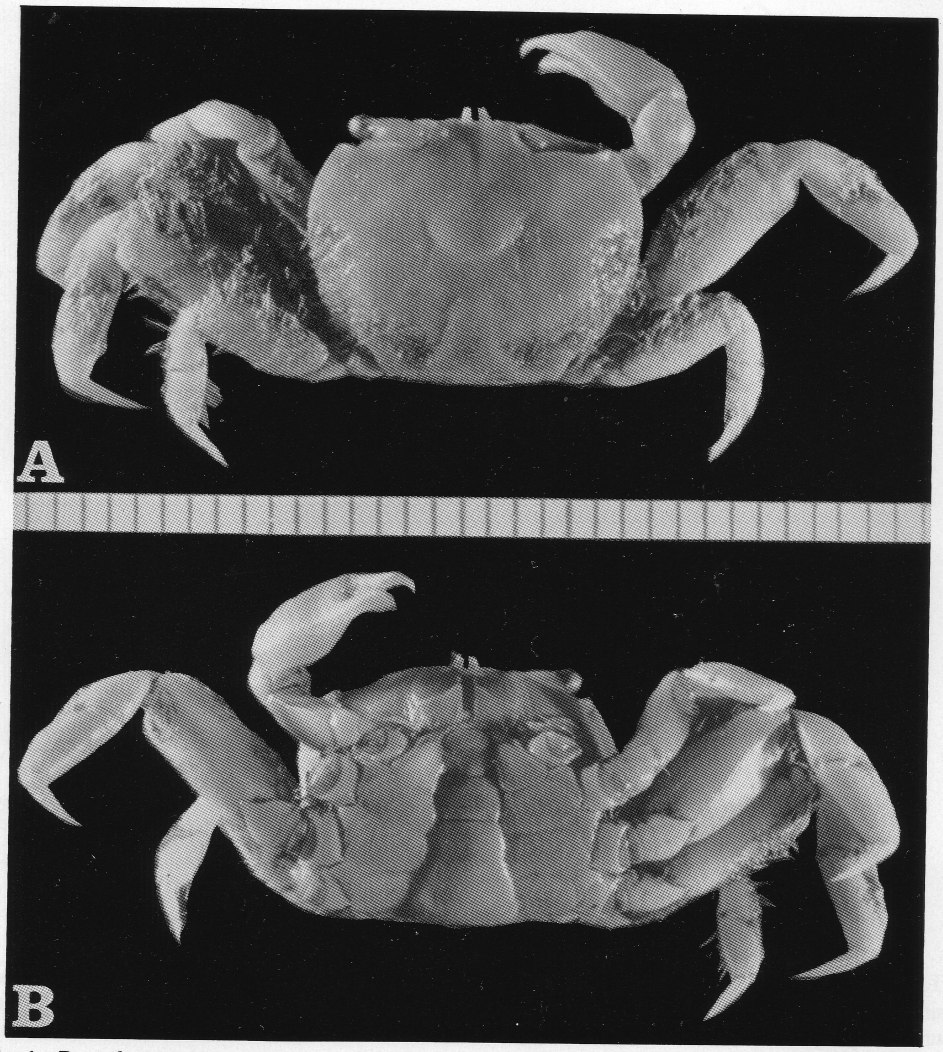

Fig. 1. *Paracleistostoma tweediei*. Paratype male (9.3 x 11.9), QMW19967. A, entire animal, dorsal view; B, ventral view.

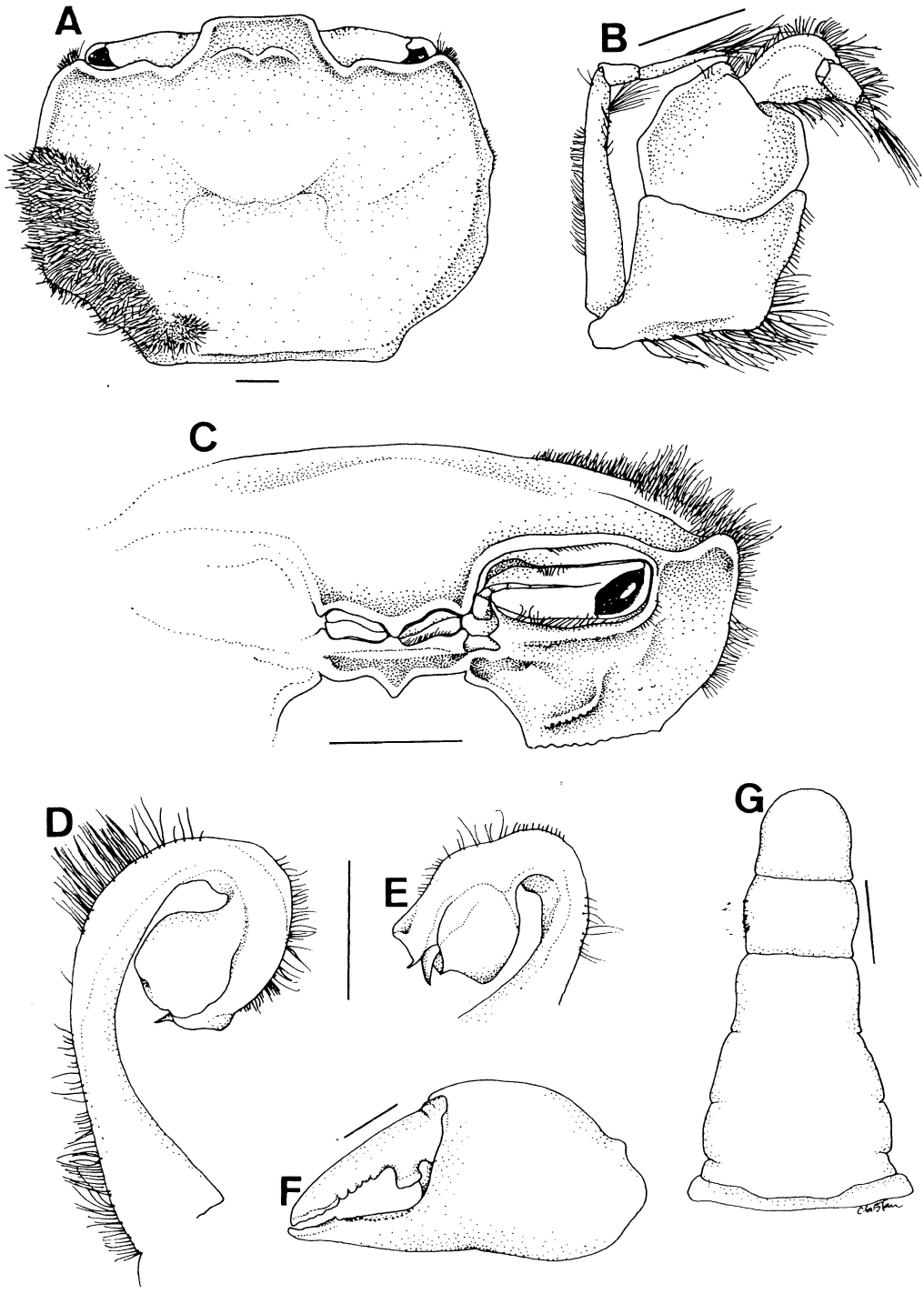

Fig. 2. *Paracleistostoma tweediei*. Paratype male (7.4 x 9.4), ZRC 1987.57-59. A, carapace, dorsal surface; B, right third maxilliped, outer surface; C, frontal view showing epistome; D, right G1, outer surface; E, right G1, inner surface; F, left cheliped, outer surface; G, abdomen. Scales=1.0 mm.

Key to *Paracleistostoma* species found in Singapore mangroves

1. Carapace with branchial regions smooth, not densely pubescent; surfaces of ambulatory legs densely pubescent; G1 with elongate subdistal lobiform process which is as long as dilated distal part of pleopod ..... *P. depressum*

   Carapace with branchial regions densely pubescent; surfaces of ambulatory legs pubescent; G1 with median lobiform process which is shorter than dilated distal part of pleopod or without any processes 2

2. Supraorbital margins almost straight, confluent with front; palm of chela elongate, length about twice that of height, tooth on cutting edge of dactylus submedian in position; tip of male first pleopod with elongate hooked or sinuous median lobe which is sharp-tipped ..... *P. longimanum*

   Supraorbital margins gently sinuous, separated from front by small notch; palm of chela short, length subequal to height, tooth on cutting edge of dactylus sub-basal in position; male first pleopod without any lobiform process, median part with short spine ..... *P. tweediei,* new species

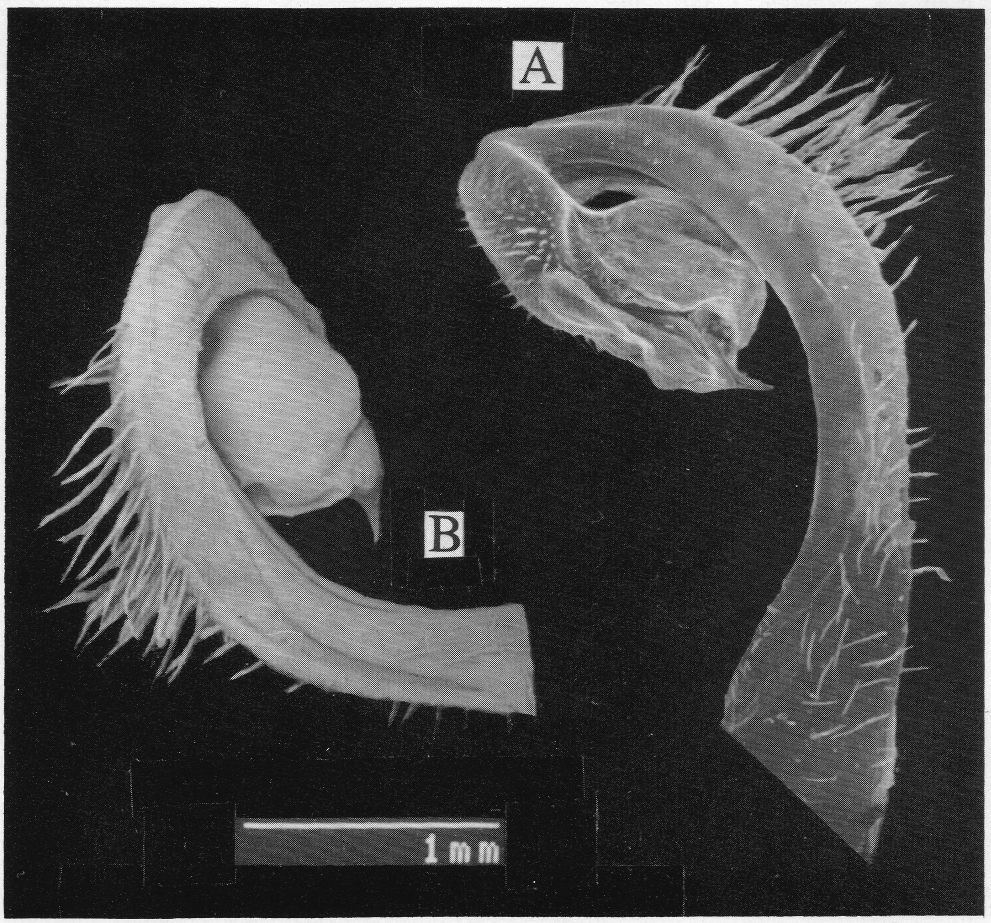

Fig. 3. *Paracleistostoma tweediei.* Paratype male (9.3 x 11.9), QMW19967. A, B, first gonopod.

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LITERATURE CITED

Alcock, A., 1900. The Brachyura Catometopa, or Grapsoidea. XVI. Materials for a carcinological fauna of India, No. 6. *J. Asiat. Soc. Bengal*, **69**(II:3): 279-456.

Dai, A. Y., S. L. Yang, Y. Z. Song & G.-X. Chen, 1986. *Crabs of the China Seas*. China Ocean Press (Beijing) (in Chinese). 642 pp, 74 pls.

Man, J. G. de, 1895. Berich über die von Herrn Schiffscapitän Storm, zu Atjeh, an den westlichen Küsten von Malakka, Borneo und Celebes sowie in der Java-See gesammelten Decapoden und Stomatopoden, Part 1. *Zool. Jahrb. (Syst. Geogr.)*, **8**:485-609.

Manning, R. B. & L. B. Holthuis, 1981. West African Brachyuran Crabs (Crustacea: Decapoda). *Smithsonian Contr. Zool.*, **306**: 1-379.

Nobili, G., 1903. Contributo alla fauna carcinologica di Borneo. *Boll. Mus. Zool. Anat. comp. R. Univ. Torino*, **18**(447):1-32.

Rathbun, M. J., 1926. Brachyuran crabs from Australia and New Guinea. *Rec. Aust. Mus.*, **15**(2):177-182, pls. xiv-xvi.

Tan, C. G. S. and P. K. L. Ng, 1994. An annotated checklist of mangrove brachyuran crabs in Malaysia and Singapore. In: *Ecology and Conservation of Southeast Asian Marine and Freshwater environments including wetlands. Eds. A. Sasekumar, N. Marshall & D. Macintosh. Hydrobiologia* **285**:75-84.

Tweedie, M. W. F., 1937. On the crabs of the family Ocypodidae in the collection of the Raffles Museum. *Bull. Raffles Mus.*, **13**: 140-170.

Ward, M., 1933. New genera and species of marine Decapod Brachyura. From the coasts of New South Wales and Queensland. *Austr. Zool.*, **7**:377-394, pls. 21-23.

Yang, S. L. & S. M. Sun, 1993. A new species of *Paracleistostoma* from China (Crustacea: Decapoda: Ocypodidae). *Acta Zootax. Sinica*, **18**(2): 149-151.

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